9.0
Undeveloped Areas Vegetation

Undeveloped natural areas perform a host of ecological functions and support multiple societal values – economic, quality of life, aesthetic – in addition to providing military mission support. Maintaining a healthy native vegetation cover is an integral part of protecting water quality, enhancing watersheds and wildlife habitat, and is essential for conserving biodiversity. Maintaining a healthy native vegetation cover is also essential for ensuring the future availability of land and water resources for military training and testing; for providing for sustained multiple uses of an area's natural resources (e.g., production of forest products, provision of opportunities for outdoor recreation, and scientific research and education); and for ensuring a high quality of life for the soldier.

Plant communities are dynamic systems, influenced by natural and human forces. Consequently, management actions must be based not only on knowledge of the plant species comprising the community, but also on an understanding of the physico-chemical factors and forces acting on the community (e.g., hydrology, soil chemistry) and the interrelationship of the plant communities with associated wildlife communities. Natural resource managers must be vigilant to detect changing conditions, and must be able to discern between plant community changes due to the natural dynamics of the system and changes due to disruptions in the natural dynamics. Because the ecological functions of plant communities are influenced by their positions within the larger landscape, natural resource managers must understand and consider the larger landscape context within which the communities are situated.

Fort Belvoir's surrounding local area (metropolitan Washington D.C. area) and regional area (Chesapeake Bay region) are both experiencing rapid conversion of undeveloped natural areas to developed land uses. Throughout the local and regional areas, large tracts of native vegetation are being lost or fragmented, with the consequent impacts on watersheds, water quality, and fish and wildlife habitat. As development replaces open space, vegetation in the remaining undeveloped areas is increasingly subject to disruption by invasions of exotic vegetation, stormwater-related erosion and sedimentation, overuse by humans, and overbrowsing by wildlife.

A large portion (about 70%) of Fort Belvoir (Main Post and EPG combined) is undeveloped and supports predominantly forest communities. The other major native vegetation community types are tidally flooded marsh and shrub-scrub communities. A recent ecological communities survey by DCR-NHP (McCoy and Fleming, 2000) identified 17 native vegetation community types on Fort Belvoir, four of which possess state conservation rankings of "very rare," or rarer (Sections 9.2.2 and 12.2.5). Within the metropolitan Washington D.C. area, Fort Belvoir represents a significant tract of native vegetation in terms of size, diversity, and position relative to the location of off-post tracts of native vegetation.

Within Fort Belvoir's Main Post, areas of native vegetation occur in large blocks, aligned from the northeast to the southwest. This linear configuration affords a contiguous band of wildlife habitat through the installation, and provides for connection with wildlife habitat areas outside

the installation. Vegetation cover in the remaining 30% of Fort Belvoir consists primarily of the improved and semi-improved grounds associated with the installation's developed land uses including administrative, housing and community service facilities, developed training areas, golf courses, and other recreational facilities.

Fort Belvoir, like many other military installations nationwide, represents an area of ecologically significant native vegetation resources within an increasingly urban setting. The continued presence of such "islands" of natural habitat is critical to conservation of native plant species and communities at the local, regional, and even national levels. DoD and the Army have acknowledged the services' responsibility for natural resources conservation in their policies and regulations (Section 9.1), and have successfully demonstrated that not only is it possible to conserve native vegetation resources while performing the military mission, but that the ability to continue to provide realistic military training and testing in the future depends upon doing so.

9.1 UNDEVELOPED AREAS VEGETATION POLICIES

9.1.1 Federal Undeveloped Areas Vegetation Policy

There is no overarching federal law regarding protection of non-threatened or non-endangered vegetation. (Federal endangered and threatened species regulations are discussed in Section 12.1.1.) There are, however, a number of federal statutes and directives addressing specific requirements pertaining to vegetation. The overall intent of each law is provided in the following bullets:

- The Sikes Act Improvement Act (16 U.S.C. 670a[a 3 A and B]) requires military installations to provide for "(A) the conservation and rehabilitation of natural resources on military installations; [and] (B) the sustainable multipurpose use of the resource which shall include hunting, fishing, trapping and non-consumptive uses." The Sikes Act also requires the INRMP to include, "fish and wildlife habitat enhancements or modifications."

- The Federal Noxious Weed Act of 1974 (7 U.S.C. §§ 2801-2814) prohibits the import or movement of nonindigenous weeds that have the potential to interfere with the growth of useful plants, clog waterways, interfere with navigation, cause disease, and that generally are detrimental to agriculture, commerce, and public health, unless pursuant to a permit. The Act prohibits the sale, purchase, barter, exchange, taking, or giving of a noxious weed in violation of the Act. The Act also requires each federal agency to develop a management program to control undesirable plants on federal lands when a similar state program is in place. Where applicable, federal agencies are to enter into cooperative agreements with state agencies to coordinate the management of undesirable plant species on federal lands.

- Executive Order 13112, *Invasive Species* (February 3, 1999) requires federal agencies to work to prevent introductions of invasive plants, control and monitor detected populations of invasives, restore native species and habitats affected by invasives, and promote public education on invasive species and their control.

- Presidential Memorandum, *Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds*, dated April 26, 1994, and the related guidance (60 FR 40837, August 10, 1995) requires federal agencies to implement environmentally and economically beneficial landscaping practices, including the use of regionally native plants for landscaping.

- Executive Order 13148, *Greening the Government through Leadership in Environmental Management* (April 22, 2000) provides a timeframe by which federal agencies must incorporate the *Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds* (August 10, 1995) into landscaping programs, policies, and practices.

- Executive Order 11990, *Protection of Wetlands* (May 24, 1977) requires federal agencies to take actions to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.

- Executive Order 11988, *Floodplain Management* (May 24, 1977) requires federal agencies to take action to reduce the risk of flood loss, to minimize the impacts of floods, and to restore and preserve the natural and beneficial values served by floodplains.

- The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) (7 U.S.C. 136 et seq.) affords vegetation protection by emphasizing pest management using biological, cultural, chemical, and physical tools in a manner that minimizes economic, health, and environmental risks.

- The Plant Quarantine Act (7 USC 15 1-164a, 167) calls for the Animal and Plant Health Inspection Service (APHIS) to regulate the importation and interstate movement of nursery stock and other plants that may carry harmful pests and diseases.

- The Federal Plant Pest Act (7 USC 150aa-150jj) prohibits the movement of plant pests from a foreign country into and through the U.S., unless permitted by the Secretary of Agriculture. The APHIS has broad authority to inspect, seize, quarantine, and destroy potentially harmful plant and animal materials.

- The Organic Act of 1944 (7 USC 147a, 148, 148a-e) authorizes the APHIS to detect, eradicate, suppress, control, prevent, or retard the spread of plant pests.

9.1.2 State Undeveloped Areas Vegetation Policy

Virginia has no overarching vegetation protection law regarding non-threatened or non-endangered plant species and communities. (Endangered, threatened and rare species policy is discussed in Section 12.1.2.) However, the Virginia Noxious Weed Law (Code of Virginia, Title 3.1, Chapter 17.2), relates to plants and seeds used in restoration or landscaping. This law prohibits the movement, transport, delivery, shipment, or offering for shipment into or within Virginia of any noxious weed, without a permit from the Commissioner of Agriculture and Consumer Services. Section 10.1.2 contains a more detailed description of this regulation.

The Virginia Pesticide Control Act (Title 3.1, Chapter 14.1 of the Code of Virginia) confers powers and authority on the Virginia Pest Control Board to develop regulations that restrict or prohibit the sale or use and disposal of any pesticide or pesticide container or residuals that are toxic or hazardous to humans or wildlife, or may adversely affect the environment (Section 10.1.2).

9.1.3 Department of Defense Undeveloped Areas Vegetation Policy

The Department of Defense's natural resources management policy is contained within DoDI 4715.3, *Environmental Conservation Program*. This instruction requires installations to follow an ecosystem-based approach to land management, to inventory and protect important biological resources, and to promote biodiversity. It addresses various aspects of land management including forestry and agricultural operations, management measures for the removal or control of exotic species, beneficial landscaping practices, and habitat restoration and rehabilitation.The following excerpts from DoDI 4715.3 are applicable to vegetation management. Excerpts from DoDI 4715.3 regarding endangered and threatened species are listed in Section 12.1.3.

Excerpts from DODI 4715.3
Select Provisions Applicable to Vegetation Protection

- All DoD conservation programs shall work to guarantee continued access to our land, air, and water resources for realistic military training and testing while ensuring that the natural and cultural resources entrusted to DoD care are sustained in a healthy condition for scientific research, education, and other compatible uses by future generations. (D1a)

- The principal purpose of DoD lands and waters is to support mission-related activities. Those lands and waters shall be made available to the public for educational or recreational use of natural and cultural resources when such access is compatible with military mission activities, ecosystem sustainability, and with other considerations such as security… (D1d)

- Natural resources under the stewardship and control of the Department of Defense shall be managed to support and be consistent with the military mission, while protecting and enhancing those resources for multiple use, sustainable yield, and biological integrity. Land use practices and decisions shall be based on scientifically sound conservation procedures and techniques, and use scientific methods and an ecosystem approach. (D2a)

- Biologically or geographically significant or sensitive natural resources (e.g., wetlands, forests, floodplains, watersheds, estuaries, riparian areas, coastal barrier islands, marine sanctuaries, critical habitats, animal migration corridors) or species (e.g., threatened or endangered species, certain marine mammals, and migratory birds) shall be inventoried and managed to protect these resources, and to promote biodiversity, using the goals identified in paragraph F1a. (D2c)

Excerpts from DODI 4715.3
Select Provisions Applicable to Vegetation Protection

(continued)

- DoD lands shall be reviewed for their suitability for commercial forestry and agricultural outlease purposes. Any such uses must be compatible with use of the land to support the military mission. Forestry and agricultural operations shall also be consistent with long-term ecosystem management goals. Such operations shall be balanced with and used to achieve or maintain other needs for the land, including threatened and endangered species protection, biodiversity conservation, native plant landscaping, watershed protection, wildlife enhancement, outdoor recreation, and natural beauty. (D2e)

- Management measures for the removal or control of exotic species shall be included in installation INRMPs when applicable. (D2h)

- Environmentally and economically beneficial landscaping practices shall be used on all DoD lands… Each installation shall, to the extent practical, use regionally native plants for landscaping and other beneficial techniques. (D2i)

- Consistent with ecosystem-based management, altered or degraded landscapes and associated habitats shall be restored and rehabilitated whenever practical. (D2l)

- Fire is an integral element of natural processes. All DoD Components shall manage fire in a manner to preserve health and safety, protect facilities, and facilitate the health and maintenance of natural systems. (D2n)

- Portions of installation real property that have significant ecological, cultural, scenic, recreational, or educational value may be set aside for conservation of those resources, where such conservation is consistent with the military mission. (F1j)

DoD's pest management policy is contained within DoDI 4150.7, *Department of Defense Pest Management Program.* Excerpts from this instruction are provided in Section 10.1.3 of this INRMP.

Memoranda of Understanding (MOUs) have been established between DoD and the Departments of Agriculture (March 27, 1963) and Interior (April 7, 1978). The MOUs authorize execution of cooperative agreements for mutual conservation objectives. For example, installations may develop cooperative agreements with the Department of Agriculture's Agricultural Research Service, Natural Resources Conservation Service (formerly the Soil Conservation Service), and Forest Service for assistance in the use, development, protection, and conservation of forest and other vegetative cover resources, for soil and water conservation, and for related research.

9.1.4 Department of the Army Undeveloped Areas Vegetation Policy

The Department of the Army's (DA's) natural resources management policy is contained within AR 200-3, *Natural Resources–Land, Forest and Wildlife Management*. This regulation establishes DA's requirements for managing and using land and water resources in accordance

with the principles of ecosystem management, and institutes DA's commitment to conserve, protect, and sustain biological diversity, and to restore degraded ecosystems. AR 200-3 also establishes DA's commitment to manage its forested lands on an ecosystem basis, manage habitat to conserve and enhance existing flora and fauna, control off-road vehicle (ORV) use, and minimize costs for grounds maintenance. The following excerpts from AR 200-3 are applicable to vegetation management. Excerpts from AR 200-3 regarding endangered and threatened species are listed in Section 12.1.4.

Excerpts from AR 200-3
Select Provisions Applicable to Vegetation Protection

- The natural resources management professional will be an active participant in all planning and decision making activities regarding uses of the land to ensure that current and planned mission activities (for example, master planning, construction requests, site approval requests, and training exercise plants) are conducted in a manner which is compatible with natural resources and other environmental requirements. (Para. 3-2b)

- Grounds will be maintained at the levels and intensities necessary to meet the designated use criteria, protect, and enhance the natural resources, and ensure a pleasing appearance in harmony with the natural landscape. (Para. 4-1a)

- Costs for maintaining grounds will be minimized by providing the least amount of mowed area and landscape plantings necessary to accomplish management objectives and by the use of low maintenance species, agricultural leases, reforestation, natural areas, and wildlife habitat. (Para. 4-1b)

- It is Department of the Army policy to maintain, restore, and mange its forest lands on an ecosystem basis. The harvesting of forest products, including other consumptive and non-consumptive activities that take advantage of the forest environment, are allowed and encouraged when conducted consistent with protecting and maintaining a viable, self-sustaining forest ecosystem… Forest ecosystem management strategies should be broad-based to optimize overall natural resources benefits, and not focused on a single management objective, for example, maximizing timber production. (Para. 5-1b)

- Volume inventories of forest stands will be made and kept current (not older than ten years) to provide for sustained production of forest products. (Para. 5-2a)

- The Forest Service has the delegated responsibility for carrying out the provisions of the Cooperative Forestry Assistance Act of 1978 (16 U.S.C. 2101) on National Forest Service lands and in cooperation with other Federal and managing agencies, the States and private landowners on other forestlands. It is intended that the USDA Forest Service will provide technical assistance and appropriate funds to meet specific pest management project objectives as follows: (1) Provide foliage protection. (2) Reduce specific insect and disease populations. (3) Reduce the risk of artificial spread to uninfested areas. (4) Prevent tree mortality. (Para. 5-3b)

Excerpts from AR 200-3
Select Provisions Applicable to Vegetation Protection

(continued)

- Habitat management efforts will be accomplished in a manner to conserve and enhance existing flora and fauna consistent with the Army goal to conserve, protect, and sustain biological diversity while supporting the accomplishment of the military mission. Activities will be directed towards management to maintain healthy ecosystems, and to restore degraded ecosystems to their historic functions and values. Primary management consideration will be given to the management of indigenous listed, proposed, and candidate species habitats. Also, consideration of other environmentally sensitive areas and other areas of special concern (for example, riparian zones, wetland, highly erodible areas) should be identified and addressed in the Integrated Natural Resources Management Plan. (Para. 6-7)

- All land and water areas will be closed to off-road recreational use by motorized ORVs except those areas and trails which are determined suitable and specifically designated for such under the procedures established in this regulation. (Para. 8-1b)

- When ORV use is permitted, the intensity, timing, and distribution will be carefully regulated to protect the environmental values. In designating suitable sites, equitable treatment should be given to all forms of outdoor recreational activity and, where possible, nonconflicting use will be encouraged on existing trails. Prior to designating such areas or trails for ORV use, the environmental consequences must be assessed and environmental statements prepared and processed when such assessments indicated that the proposed use will create a significant environmental impact or be environmentally controversial. (Para. 8-1c)

The DA pest management policy is contained in AR 200-5, *Environmental Quality—Pest Management* (October 29, 1999). This regulation implements the requirements of DoDI 4150.7 to protect natural resources from damage by insects, weeds, and other pests in ways that promote training and readiness with minimum risk to the environment. The regulation promulgates policies, responsibilities, and procedures to implement the Army Pest Management Program, and supplements the federal, state, and local laws described in AR 200-1 for the Army Environmental Program. In implementing DoDI 4150.7, each installation's Department of Public Works must prepare and annually update a pest-management plan. The plan should list all program objectives, prioritized according to the potential or actual impact on health, morale, structures, or property. The current *Fort Belvoir Integrated Pest Management Plan* was approved and signed by the Major Army Command (MACOM) and the Garrison Commander in December of 1998.

9.1.5 Fort Belvoir Undeveloped Areas Vegetation Policy

Fort Belvoir has no overarching policy regarding undeveloped areas vegetation management on-post. It does, however, have several policies pertaining to specific aspects of vegetation management (e.g., tree protection during construction, pest management, refuge management, habitat management for wildlife). Fort Belvoir's installation-specific natural resources management policies are contained within the Fort Belvoir Supplement to AR 200-3 (dated February 20, 1996) (Appendix H). This installation regulation includes specific restrictions

aimed at protecting installation land and water resources from impact. The supplement specifies requirements for installation refuge management, urban forest management, wildlife habitat management, and firewood management.

Based on the urban forest management requirements in Fort Belvoir's Supplement to AR 200-3, Fort Belvoir's *Tree Removal and Protection Policy*, 420-22-00, dated August 15, 2000, promotes "site planning techniques and construction practices that maximize retention and protection of existing trees before considering removal"(Appendix I). This regulation requires that "…all proposed tree and shrub removals as well as construction and excavation activities that may impact the growth and survival of trees are to be approved by the DIS." It also requires that "two new trees are to be planted for each tree 4 inches and larger in diameter… removed through construction on Fort Belvoir."

Fort Belvoir's *Integrated Pest Management Policy*, 200-04-00 dated 24 January 2000 requires planning that incorporates "education, record keeping, and best management practices to prevent pests and diseases from damaging property" (Appendix K). It also requires that all pest management operations on Fort Belvoir are carried out in accordance with the *Fort Belvoir Integrated Pest Management Plan* and applicable federal, state, and local laws (U.S. Army, 2000b). The policy letter designates ENRD as the responsible party for pest management compliance on Fort Belvoir, which enables it to enforce its requirements.

Fort Belvoir Regulation 210-27, *Range Procedures and Utilization of Training Areas*, provides specific requirements for environmental protection and conservation of training areas. It requires that vehicles stay on established trails and roads, restricts riot control agents to specified training areas to minimize environmental damage, and requires that all waste be removed from the training areas and disposed of properly. The regulation also requires ENRD review of all land disturbing activities (U.S. Army, 1994).

9.1.6 Chesapeake Bay Program

DoD and DA are signatory partners of the Chesapeake Bay Program (CBP). The Chesapeake Bay Program strives to restore and protect the Bay's living resources, their habitats, and ecological relationships. The 1987 *Chesapeake Bay Agreement*, the 1990 *Cooperative Agreement Between DoD and EPA Concerning Chesapeake Bay Activities*, the 1993 *DoD/EPA Action Items for the Chesapeake Bay Program*, the 1994 *Agreement of Federal Agencies on Ecosystem Management in the Chesapeake Bay (FACEUP)*, the 1998 *Federal Agencies' Chesapeake Ecosystem Unified Plan*, and the renewed Chesapeake Bay agreement, *Chesapeake 2000,* contain specific goals, objectives, and commitments designed to provide for the restoration and protection of the Bay's living resources and their habitats. In particular, *FACEUP* commits partners to inventory habitat restoration needs on federal lands and complete two priority habitat restoration projects each year. It also calls for the restoration of 200 miles of forest buffers on federal lands by 2010, as well as the control of terrestrial and aquatic invasive species on priority sites on federal lands. Specific CBP directives that pertain to native vegetation include Directive No. 94-1, *Riparian Forest Buffers*; Directive No. 94-3, *Framework for Habitat Restoration*; and Directive No. 97-3, *Wetlands Protection and Restoration Goals*.

9.1.7 Partners in Flight Program

DoD is a partner in promoting and supporting the Partners in Flight (PIF) Program. The PIF Program strives to address the problems facing neotropical migratory birds through communication, cooperation, and conservation efforts, including protection of vital vegetative habitats. As part of the PIF Program, DoD installations are encouraged to incorporate elements of the Partners in Flight Bird Conservation Strategy into their INRMPs. Such elements include habitat management practices such as prescribed burning and timber management programs.

9.2 BASELINE VEGETATION CONDITIONS

Information on vegetation conditions at Fort Belvoir has been obtained through various surveys and studies (Table 9.1). Comprehensive plant community descriptions and mapping were developed through a plant communities survey of Main Post and EPG (Paciulli, Simmons and Associates, Ltd., 1998a; 1999a) and an ecological communities assessment of Fort Belvoir Main Post performed by DCR-NHP (McCoy and Fleming, 2000). A natural heritage inventory, which included the identification of rare plant species and communities, was completed in 1997 by DCR-NHP (Hobson, 1996; 1997) for Main Post and EPG (Section 9.2.3). A floristic inventory was developed, listing the plant species on Fort Belvoir Main Post (Wells, 1999) (Appendix E). Important vegetation surveys of Fort Belvoir Main Post include the invasive/exotic vegetation survey (Paciulli, Simmons and Associates, Ltd., 2000b) and the grassland survey (Paciulli, Simmons and Associates, Ltd., 1996). Other important vegetation surveys of Main Post and EPG include the Timber Inventory (North American Resource Management, 1991), the Watershed Survey (Landgraf, 1999), and the forest pest surveys/monitoring.

Table 9.1: Sources of Fort Belvoir Vegetation Information

Subject/Section	*Author*	*Method*	*Coverage*	*Year*	*Product*
Plant Communities (Section 9.2.1)	Paciulli, Simmons & Associates, Ltd.	Photo interpretation and field survey	Installation-wide	1998 (Main Post); 1999 (EPG)	Community mapping, species list, and report
Plant Species (i.e. floristic list) (Section 9.2.4)	George Washington University /Paciulli, Simmons & Associates, Ltd.	Field survey	Installation-wide, exclusive of cantonment areas and EPG	1999	Floristic species list
Rare Species (Section 12.2.4)	Virginia Department of Conservation and Recreation, Division of Natural Heritage	Field survey	Installation-wide, exclusive of cantonment areas	1994; 1995; 1996	Species list, report, and maps
Ecological Communities (Section 9.2.2)	Virginia Department of Conservation and Recreation, Division of Natural Heritage	Field survey	Installation-wide, exclusive of cantonment areas and EPG	2000	Species list, map, and report; permanent monitoring plots

Table 9.1: Sources of Fort Belvoir Vegetation Information					
Subject/Section	***Author***	***Method***	***Coverage***	***Year***	***Product***
(continued)					
Timber (Section 9.2.7)	North American Resource Management, Inc.	Field survey	Installation wide, exclusive of the cantonment area and EPG	1991	Forest inventory, report, and forest compartment maps
Urban Forest (Section 10.2.2)	Davey Resource Group	Field survey	All improved grounds	2000	List of locations, species, sizes, and management
Improved Grounds (Section 10.2.3)	CA Contract	Field survey	All improved grounds maintained in accordance with the CA contract	2000	Management units and maintenance activities
Invasive Exotic Vegetation (Section 9.2.5)	Paciulli, Simmons & Associates, Ltd.	Field survey	Installation-wide, exclusive of cantonment area and EPG	2000	Species list, map, and management plan
Grasslands (Section 9.2.6)	Paciulli, Simons & Associates, Ltd.	Field survey	Installation-wide, exclusive of cantonment areas and EPG	1996	Map and management plan
Watersheds (Section 9.2.8)	Chris Landgraf (PGI, Inc.)	Field survey	Installation-wide	1999	Maps and management plan
Forest Pests, including gypsy moths and cankerworms	U.S. Department of Agriculture and In-house	Field survey	In forested areas installation-wide	Annually	Survey results, management recommendations

9.2.1 Plant Community Survey

A plant community survey of Fort Belvoir Main Post and EPG was conducted using photointerpretation and limited field survey (Paciulli, Simmons and Associates, Ltd., 1998a; 1999a). This survey described and mapped 16 broad community types, covering all of the Fort Belvoir Main Post. As indicated in Figure 9.1 and Table 9.2, these types included categories such as natural and planted pine forests, various upland and palustrine hardwood stands, tidal and non-tidal wetlands, old field grasslands, and urban land. The plant community descriptions used for this survey were developed in coordination with DCR-NHP.[1] The plant community mapping is included within the installation GIS. A narrative description of each community type is contained within Appendix F.

[1] Descriptions used in this survey predated development of The Nature Conservancy's National Vegetation System (used for the later ecological communities assessment; Section 9.2.2).

PLANT COMMUNITIES on FORT BELVOIR

SOURCE: PACUILLI, SIMMONS & ASSOCIATES, Ltd., 1998; McCOY and FLEMING, 2000

FIGURE: 9.1

Table 9.2: Acreage and Distribution of Plant Community Types on Fort Belvoir			
Plant Community	*Acreage*		*Distribution*
	Main Post[*]	*EPG*[†]	
Oak/Ericad (Heath Family) Forest	1,253	227	Upland areas of gravelly ridges and dry slopes
Beech Mixed Oak Forest	1,146	12	Upland areas of gradual, well-drained ravine slopes
Tulip Poplar Mixed Hardwood Forest	987	75	Moist, fertile ravine slopes and ravine bottoms
Seep Forest	39	1	Groundwater-saturated flats and slopes
Mixed Pine Hardwood Forest	196	49	Previously disturbed areas in late succession
Virginia Pine Forests	425	185	Previously disturbed areas in mid-succession
Loblolly Pine Forest	245	11	Planted stands
White Pine Forest	6	0	Planted stands
Moderately Well-Drained Floodplain Hardwood Forest	173	40	Moderately well-drained to somewhat poorly-drained floodplain bottomland
Poorly-Drained Floodplain Hardwood Forest	422	13	Somewhat poorly-drained to very poorly-drained floodplain bottomlands and sloughs
Non-Tidal Marsh/Beaver Pond	131	3	Above tidal limits of Accotink, Pohick, and Dogue Creeks
Tidal Marsh	96	0	Shallow tidal areas of Accotink and Pohick Creeks and at the mouths of several small streams.
Freshwater Tidal Swamp Forest	45	0	Tidally influenced palustrine areas.
Tidal Scrub/Shrub Wetland	16	0	Edges of tidal swamp forests near the transition to tidal marsh.
Old Field Grassland	233	53	Previously disturbed areas in early successional stages.
Urban Land	2,809	121	All developed areas including improved and semi-improved grounds.

[*]Source: Paciulli, Simmons and Associates, Ltd., 1998a. The report did not have information on a few small areas; therefore, the total acreage of the plant communities is less than the total acreage of the Main Post.

[†]Source: Paciulli, Simmons and Associates, Ltd., 1999a. The Accotink Creek Channel was not included in the vegetation community survey; therefore, total acreage of plant communities is less than the total acreage of EPG.

9.2.2 Ecological Communities Assessment of Main Post

The ecological communities assessment was conducted using photo interpretation of recent installation aerial photography and extensive multi-season field survey and sampling (McCoy and Fleming, 2000). The assessment was undertaken to provide a more-refined and expanded ecological analysis of the native plant communities on Fort Belvoir. The community descriptions used for this assessment were based upon The Nature Conservancy's (TNC's) National Vegetation Classification (which was not available at the time of the plant communities survey). TNC's National Vegetation Classification is a nationwide effort for standard communities classification that addresses the vegetation cover conditions together with environmental conditions (e.g., hydrologic regime).

The ecological communities assessment identified and described 17 native plant community types on the undeveloped parts of Fort Belvoir Main Post (Table 9.3).[2] A total of 472 vascular plant taxa were recorded within the survey plots. As part of the community descriptions, DCR-NHP provided detailed ecological information including vegetation composition, soil chemistry, and physical parameters (e.g., pH, organic matter, moisture, texture, etc.). DCR-NHP assigned conservation priority rankings (i.e., rarity rankings) for each community on post. Representative plots of each ecological community type were permanently marked in the field and their locations were entered into the installation GIS, so that they may be used for future monitoring. The ecological community mapping information has been incorporated into the installation GIS.

Table 9.3: Distribution of Ecological Community Types on Fort Belvoir

Ecological Group	*Community Type (State Conservation Rank[a])*	*Distribution on Fort Belvoir*
Upland Forests	Flatwoods Mesic Forest (S4?)	Level or nearly level topography at low elevations, bordering major streams and alluvial floodplains.
	Mesic Mixed Hardwood Forest (S5)	Elevations of 3 m to 33.5 m. Lower, middle, or upper slopes. Along stream bottoms and on level areas.
	Dry-Mesic Oak-Hickory Forest (S5)	Well-drained areas around elevation of 24.8 m. Topography ranges from floodplain to ridge crest.
	Mixed-Oak / Ericad Forest (S5)	Dry acid ridgetops and upper to middle slopes. Mean elevation is 30.5 m.
	Chestnut Oak / Ericad Forest (S4)	North-facing middle and upper slopes of the Coastal Plain and Piedmont. Mean elevation of 20.6 m.
Alluvial Forests and Seeps	Alluvial Mixed Hardwood Forest: Poorly-Drained Type (S4)	Low elevation (mean = 5.9 m) forested floodplains or lowlands with poor drainage.
	Alluvial Mixed Hardwood Forest: Well-Drained Type (S5)	Alluvial floodplains at low elevation (mean = 7.9 m). Well-drained soils.
	Coastal Plain / Piedmont Acidic Seepage Swamp (S2)	Groundwater-saturated stream headwaters, small seeps and runs, stream bottoms at base of slopes. Mean elevation of 9.1 m.

[2] McCoy and Fleming did not address planted pine stands, or early or transitional successional types addressed by the previous plant communities survey. The difference in the number of community types between this survey and the survey by Paciulli, Simmons and Associates, Ltd., is due to the more refined definitions of ecological communities.

Table 9.3: Distribution of Ecological Community Types on Fort Belvoir		
Ecological Group	***Community Type (State Conservation Rank[a])***	***Distribution on Fort Belvoir***
(continued)		
Swamp Forests and Marshes	Bottomland Hardwood Swamp (S4?)	Low elevation (0 to 6.1 m) floodplains. Somewhat poorly drained to poorly drained.
	Tidal Hardwood Swamp (S3?)	Tidally-flooded, freshwater forested floodplains of Coastal Plain estuarine rivers and creeks. Poorly-drained alluvial soils.
	Tidal Shrub Swamp (S2?)	Freshwater wetlands, usually in marginal zones flooded only irregularly by tides.
	Beaver Marsh: Rush – Sedge Type (SM)	Low elevation (mean = 6.1 m) wetlands of Coastal Plain and Piedmont. Common in disturbed, ponded habitats.
	Beaver Marsh – Arrow-arum Type (SM)	Low elevation beaver wetlands (mean = 3.1 m) of Coastal Plain and Piedmont.
	Tidal Freshwater Marsh: Mixed Type (S1)	Drier portions of the marsh complex influenced by regular tides. Poorly drained soils.
	Marsh: Mud Flat Type (S3?)	Tidal freshwater river mud flats with high water levels (1 to 3 m deep). Submerged and exposed daily.
	Tidal Freshwater Marsh: Wild Rice – Smartweed Type (S3?)	Tidally influenced river systems with daily tidal flooding but beyond influence of salinity.
	Tidal Freshwater Marsh: Spikerush – Golden-club Type (S1)	Tidal marshes within influence of daily flooding but beyond effects of salinity.

Source: McCoy and Fleming, 2000

[a]State Conservation Rankings:
S1 – Extremely rare, generally with five or less occurrences state-wide, and/or covering <50 ha (124 acres) in aggregate; or covering a larger area but highly threatened with destruction or modification.
S2 – Very rare, generally with 6 to 20 occurrences state-wide, and/or covering <250 ha (618 acres) in aggregate; or covering a larger area but threatened with destruction or modification.
S3 – Rare to uncommon, generally with 21 to 100 occurrences state-wide; or with a larger number of occurrences subject to relatively high levels of threat; may be of relatively frequent occurrence in specific localities or geographic parts of the state.
S4 – Common, at least in certain regions of the state, and apparently secure.
S5 – Very common and demonstrably secure.
S? – Unranked
S_? – Rank uncertain or approximate.
SM – Modified, as applied to early succession communities or beaver wetlands.

Of the Main Post's 17 native vegetation communities, DCR NHP ranked the Coastal Plain/Piedmont acidic seepage swamp and the tidal shrub swamp as "very rare," and the mixed type and spikerush – golden-club type tidal freshwater marshes as "extremely rare" (Appendix G) (McCoy and Fleming, 2000). These four communities are all wetland types (Section 8.0). DCR-NHP identified existing and potential threats to the ecological integrity of each community type on post. The most significant of these threats are (1) displacement by invasive/exotic species, and (2) stormwater-related problems (e.g., sedimentation).[3] A narrative description of each of the 17 DCR-NHP plant community types, including comments on disturbances or threats to each community, is included in Appendix G.

[3] DCR-NHP did not address the threat of land development.

9.2.3 Natural Heritage Inventory

The Natural Heritage Inventory of Fort Belvoir (Main Post and EPG) was performed by DCR-NHP to address the biodiversity of the installation's natural resources. This survey involved detailed, multi-season field survey over a two-year period (Hobson, 1996; 1997). The purpose of the inventory was to systematically identify the installation's natural heritage resources (i.e., those sites supporting unique or exemplary natural communities, rare plants and rare animals, and other significant natural areas). The inventory identified four rare plant species and three watchlist plant species (Section 12.2.4).[4] The four rare plant species, velvety sedge (*Carex vestita*), vetchling (*Lathyrus palustris*), water plantain crowfoot (*Ranunculus ambigens*) and river bulrush (*Scirpus fluviatilis*) occur in the freshwater tidal marsh wetlands within the Accotink Bay Wildlife Refuge (ABWR). The locations of the three watchlist plant species, creeping spikerush (*Eleocharis smallii*), blueflag (*Iris versicolor*) and giant bur-reed (*Sparganium eurycarpum*) were not identified in the survey report, although all are wetland species. The inventory identified six locations of "significant vegetation communities" (all of which are wetlands): three associated with Accotink Bay wetlands within the ABWR, two within the lower parts of training areas T-7 and T-10, and one within HEC. The 1996 DCR-NHP inventory defined the boundaries of two recommended conservation areas to protect these resources. A third conservation area, located in the vicinity of training area T-17, was recommended based on the results of a 1997 DCR-NHP zoological inventory (Figure 8.2). The recommended conservation areas are watershed-based and encompass large areas within Fort Belvoir.

DCR-NHP identified existing and potential threats to the rare plant species and significant natural communities, and presented management recommendations (Hobson, 1996) (Section 8.0). These recommendations addressed such threats as invasive species displacement, siltation and toxics in stormwater runoff, altered hydrologic regimes, beaver activity, and shoreline erosion from boat wakes. DCR-NHP recommended long-term monitoring of the occurrences of the rare plant species and significant natural communities on post.

9.2.4 Floristic Inventory

A floristic inventory of Fort Belvoir was developed by botanist Dr. Elizabeth Wells of George Washington University (1999). The inventory was developed through a detailed, multi-season field survey of representative locations of all native plant community types on post. A total of 483 species were identified in this inventory (Appendix E).

9.2.5 Invasive/Exotic Vegetation Survey

The baseline survey of invasive/exotic vegetation of Fort Belvoir was developed through a multi-season field survey (Paciulli, Simmons and Associates, Ltd., 2000b). Table 9.4 presents the 14 invasive/exotic vegetation species identified at Fort Belvoir with significant occurrences such that they warrant consideration for control. Table 9.4 also summarizes the location and size of each occurrence, and the type of habitat in which the species typically exists. The locations of

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[4] A fourth watchlist species, American frog's bit (*Limnobium spongia*), was identified on Fort Belvoir during the DCR-NHP survey, but has since been removed from the watchlist.

problematic occurrences of invasive and exotic vegetation are being incorporated into the installation GIS.

Table 9.4. Invasive/Exotic Vegetation on Fort Belvoir Recommended for Control

Scientific Name	*Common Name*	*Size*[*]	*Habitat*[†]	*Location*
Ampelopsis brevipendunculata	Porcelain berry	S	F	Around the drainage culvert off of the perimeter road on the western portion of D/CEETA
Celastrus orbiculatus	Oriental bittersweet	L	F	Along both sides of Accotink Creek starting at the footbridge and going south along Beaver Pond Nature Trail and Accotink Creek Trail
		S-M		Scattered along roadsides throughout the post
Festuca elatior	Tall fescue	S-L	G	Fields, open areas and roadsides throughout the post
Hedera helix	English ivy	M	F	South side of Accotink Creek near the suspension (foot) bridge
		M		In woods behind buildings on Jadwin Loop, north of the former sewage treatment facility
Hydrilla verticillata	Hydrilla	S	W	In Mulligan Pond
Lespedeza cuneata	Chinese lespedeza	S-L	G	Fields, open areas and roadsides throughout the post
Lythrum salicaria	Purple loosestrife	S	W	Along the western bank of Dogue Creek, across from Dogue Creek Marina
Miscanthus sinensis	Eulalia	S	G	On the north side of Johnson Road near the pier
		S		West of the intersection of Beulah Street with Woodlawn Road near old debris landfill
		L		South side of Cissna Road (EPG) before the bridge
Phalaris arundinacea	Reed canary grass	L	W	In and along the section of Pohick Creek that is adjacent to T-9
Phragmites australis	Common reed	M	W	Along the western bank of Dogue Creek, across from the marina, near a utility line crossing
		S		At the intersection of gravel roads, across from Dogue Creek Marina
		S		In a swale along Poe Road adjacent to the landfill
		S		In a ditch along Poe Road
		L		In a wet depression, north of the archery range along the edge of grassland field
		L		Along the nature trail, north of the archery range
		M		In a ditch along Wilson Road, just north of R&D area basin
		S		Along former Keene Road adjacent to building 2454
Polygonum cuspidatum	Japanese knotweed	S	G	Northwest corner of the ABWR parking lot
		M		Along the south side of Meeres Road, just west of Pole Road

Table 9.4. Invasive/Exotic Vegetation on Fort Belvoir Recommended for Control				
Scientific Name	***Common Name***	***Size****	***Habitat†***	***Location***
				(continued)
Polygonum perfoliatum	Mile-a-minute	S	W	Between Woodlawn Road and the North Golf Course along the abandoned road that is behind the golf green
		S		Along the unnamed abandoned road northwest of Kingman and Woodlawn Road intersection
		M		In T-16 just north where Mulligan Road and unnamed road fork
		L		Along a section of Pohick Creek that is adjacent to T-9
		M		Northeast of the intersection of training roads in W-1 and T-11
		L		Northeast of building 3065 on Poe Road, at an old well site
		M		East side of Warren Road opposite its intersection with Thayer Road
		M		West of the intersection of Beulah Street with Woodlawn Road at an old debris landfill
Pueraria lobata	Kudzu	L	F	Old home site located between the Potomac River and the Officers' Club
		L		Down slope from building 2283 off of Fosters Road
		M		Surrounding portions of the coal storage area
		L		Along the access road to the former sewage treatment facility off of Jadwin Loop
Wisteria sinensis	Chinese wisteria	L	G, F	In T-16, west of unimproved Mulligan Road just north of Pole Road where it intersects with Old Mill Road
		M		East of intersection of Beulah Street and Kingman Road in the Forest and Wildlife Corridor
		L		Northwest of a reforestation site, south of the pond on north golf course
		M		North of the intersection of training roads in T-9 and T-7
		S		Along a railroad bed, west of Tracey Loop and Theots Road intersection
		M		Northern portion of T-16 on training roads inside of Kingman Gate
		S		North side of Warren Road, just north of Thayer Road
		L		From Woodlawn Road to the western side of perimeter road on D/CEETA
		M		North and scattered locations south of the bridge crossing Accotink Creek on Cissna Road (EPG)
		S		Along former Keene Road east of parking lot for building 2444

Source: Paciulli, Simmons & Associates, Ltd., 2000b

*Size Legend: S = Small, A single plant to an approximate 50 square foot area; M = Medium, Infestation is over 50 square feet but less than one-half acre; L = Large, Infestation is greater than one-half acre.

†Habitat in this table refers to the area in which the species should be controlled on Fort Belvoir. Habitat Legend: G = Grassland; W = Wetland; F = Forest

9.2.6 Grassland Survey

The grassland survey was undertaken to identify grassland areas that could be managed to enhance their wildlife habitat value (Paciulli, Simmons and Associates, Ltd., 1996).[5] The inventory used photo interpretation and field surveys to identify 51 grassland areas, ranging from less than 0.5 acre to 20 acres, for a total of 190 acres of grassland on Fort Belvoir. The locations of the inventoried grasslands have been incorporated into the installation GIS. Most of the grassland areas tend to be small and scattered. The larger grassland areas occur on the installation's closed landfills, where landfill closure regulations limit opportunities to manipulate vegetation cover.

The survey generated five general types of management recommendations including the following: (1) enhance and maintain existing grass cover (the primary management recommendation in the plan); (2) reseed with warm season grasses; (3) use plant species that have wildlife habitat benefits; (4) install nesting structures for wildlife; and, (5) control aggressive invading weeds. The survey recommended management actions on 46 of the 51 areas, primarily enhancement and maintenance of existing grass cover. The remaining five areas were not recommended for management due to their small size, or existing or planned development. Subsequent review of the grassland survey recommendations against the PIF priority bird species habitat management recommendations (Watts, 1999) indicates that the grassland survey recommendations expressed in Paciulli, Simmons and Associates, Ltd. (1996) should be revised to address habitat improvements for migratory birds (Section 11).

9.2.7 Timber Inventory

Fort Belvoir maintains a current timber inventory, as required by AR 200-3, the current inventory having been completed in 1991 (North American Resource Management, 1991). The timber inventory includes management recommendations, proposed harvest charts, and data summary tables. The current inventory map has been incorporated into the installation GIS. Figure 9.1 presents an overview of the acreage of each forest type as reported in the 1991 inventory. An update to the inventory was initiated in 2000.

9.2.8 Watershed Survey

Fort Belvoir completed an installation-wide watershed survey in 1999 (Landgraf, 1999). One of the parameters evaluated was the percent forest, wetland, and open area cover within watersheds and subwatersheds. The watershed survey showed significant variation in subwatershed vegetative cover; percent forested areas varied between 100 and 11, percent wetlands varied between 39 and 0.5, and percent open area varied between 65 and 0 (Section 7).

9.2.9 Forest Pest Surveys

Fort Belvoir's gypsy moth populations have remained low over the past years. Although higher egg mass counts have been recorded in the T-6 training area, there has been no significant

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[5] Developed areas where the grass needs to be maintained, such as lawns, recreational fields, and utility rights-of-way, were excluded from this survey.

defoliation or tree mortality since 1994. The release of parasites, as well as favorable weather conditions for the fungus *Entomophaga maimaiga*, has held gypsy moth populations in check. However, there have been regional increases in populations over the past two years. The ramifications of a potential widespread regional resurgence necessitates continued annual monitoring of populations. Fort Belvoir and USDA foresters perform annual egg mass surveys during the fall and winter months to identify potential infestations and habitat impacts. During the late spring and early summer, personnel from the USDA Beltsville Agricultural Research Center collect larval specimens of all instars to help determine the impacts of *Entomophaga maimaiga*, the gypsy moth nuclear polyhyreosis virus, and parasitic insects on population levels. No treatments have been recommended or performed over the past five years.

Fort Belvoir monitors populations of cankerworms in forested areas, including woodland borders of improved grounds. Foresters capture the adult, wingless females using a sticky paste applied to a band of tarpaper wrapped around susceptible trees during winter months. If the moths number greater than 90 per pair of trees monitored (trees selected should be within the same stand), treatment with *Bacillus thuringiensis* (Bt) is considered. A survey performed by a Fort Belvoir forester in 1999 indicated more than 90 moths per acre in two separate forested areas of Fort Belvoir, and treatment was recommended and executed.

9.3 UNDEVELOPED AREAS VEGETATION MANAGEMENT

9.3.1 Undeveloped Areas Vegetation Conservation Recommendations

The results of the various vegetation surveys indicate that Fort Belvoir has a large amount of undeveloped land (about 70% of the total land area), and that this undeveloped land supports significant native plant resources with high conservation priority. The survey results warn that the installation's vegetation resources face current and future threats, such as loss or fragmentation due to land development or timber harvesting; displacement of native species by invasive/exotic species; erosion/sedimentation from stormwater-related problems; damage/mortality by insects and disease; disturbance/destruction by wildlife (e.g., deer overbrowse, beaver and woodchuck activity); and overuse by humans (e.g., recreational events in excess/inconsistent with resource conditions). Fort Belvoir's conservation efforts must focus not only on controlling these threats, but also on restoring/enhancing conditions where these threats have already had an impact on native vegetation resources.

9.3.2 Undeveloped Areas Vegetation Multiple Use Requirements

Military Training and Testing

Since the departure of the Engineer School in 1988, Fort Belvoir essentially has no land-disturbing training activities. Present-day troop training activities consist mainly of troop field training activities (e.g., land navigation, rescue training, expert field medical badge training) and rotary aircraft training activities (e.g., helicopter touch-and-go, helicopter transport). Consequently, most of the installation's approximately 1,838 acres of training lands are in forest cover, with several open grassland areas. (Installation training lands are adjacent to and contiguous with both installation refuges and the Fort Belvoir Forest and Wildlife Corridor.) As

of 2000, military mission support requirements relative to vegetation management call for the following:

- Maintenance of large, uninterrupted areas of natural forest and open grassland cover to support troop field training activities, such as orienteering, and to support testing activities, such as testing of night vision equipment
- Maintenance of open, grassland areas to support field training of rotary wing aircraft, such as touch-and-go, and airlifting of troops and equipment based on mission priority
- Maintenance of vegetation cover conditions (e.g., tree height, grass cover, etc.) to minimize potential hazards to aircraft operations at Davison Army Airfield.

Outdoor Recreation

The Fort Belvoir Outdoor Recreation program consists of a variety of activities. Major program elements that make use of undeveloped installation land areas include hunting and fishing, summer day camps, hiking, and guided and self-guided nature walks. As of 2000, outdoor recreation program support requirements relative to vegetation management include the following:

- Avoiding fragmentation or loss of native wildlife habitat to support self-sustaining populations of native wildlife
- Maintenance of vegetation cover conditions sufficient to protect fish habitat from stormwater-related impacts, thereby supporting self-sustaining fish populations
- Maintenance of large areas of healthy native plant communities to support native plant observation (including artistic pursuits such as nature photography) and to provide for natural beauty
- Maintenance of vegetation in high use/high traffic recreation areas (e.g., along shorelines) to provide a visually pleasing appearance, and to protect sensitive resources (e.g., use of plantings to direct foot traffic and protect against erosion).

Forest and Agricultural Products

Forest products production requires the maintenance of healthy forest stands. As of 2000, forest products support relative to vegetation management include the following requirements:

- Controlling damaging forest pests
- Managing wildfire hazard
- Performing timber stand improvement
- Reforesting disturbed areas
- Conducting forest products sales.

The installation's location within an urban setting, and its considerable distance from timber mills, results in very little commercial interest in forest products. As of 2000, the predominant forest product sales were firewood sales. Fort Belvoir has no agricultural production areas. The installation's urban setting results in no commercial interest in agricultural outleases.

Environmental Education and Scientific Research and Study

In recent years, Fort Belvoir has supported an increasing number and variety of environmental education and scientific research programs and activities (Section 13.0). Interest and participation in these types of activities by both the military community and the general public has been increasing steadily. The continued success of environmental education and scientific research and study activities on post requires the continued existence of healthy, native ecosystem conditions that can serve as outdoor classrooms, and as field test and study sites.

Land Development

While not specifically addressed in the DoD and the Army's management policies (Section 9.1), the construction, operation, and maintenance of developed facilities, such as administrative, community service, education and housing facilities, along with their supporting infrastructure, influence an installation's native vegetation resources. This is especially true for Fort Belvoir. As of 2000, Fort Belvoir supports more than 100 tenant organizations, and has approximately 2,070 housing units. Short- and long-term planning, as expressed in the *Fort Belvoir Real Property Master Plan* (Woolpert, 1993a), calls for continued development to support new facilities. The siting, construction, maintenance, and use of these facilities represents the most significant source of potential impact to native vegetation resources on Fort Belvoir.

Mission support in this area necessitates balancing the need for new/expanded facilities against the need for natural resources conservation. Conservation of native vegetation resources is important for meeting DoD and Army requirements for protecting and enhancing native biodiversity (Section 9.3.1.1). Maintaining healthy native vegetation is also an important consideration for maintaining soldier quality of life. Fort Belvoir's role as the administrative and community support facility for the National Capital Area means that the installation supports a large number of military and civilian personnel who live, work, and make use of installation facilities and natural resources. Maintaining natural beauty through the protection of healthy native vegetation conditions is very important to maintaining the quality of life for the large number of soldiers and associated personnel at Fort Belvoir. Management of developed areas on the installation is discussed in Section 10.3.

9.3.3 Undeveloped Areas Vegetation Management Actions to Date

Fort Belvoir manages its vegetation resources in accordance with the resource conservation and multiple use requirements of DoDI 4715.3 and AR 200-3. To date, Fort Belvoir's natural resources management program has focused on balancing conservation of ecologically significant vegetation resources with providing for military mission support and sustained multiple use of vegetation resources. The program has also emphasized sustaining and enhancing forest and grassland resources and controlling invasive/exotic vegetation.

9.3.3.1 Undeveloped Areas Vegetation Conservation Actions

Fort Belvoir has set aside for conservation, three large blocks of ecologically significant vegetation by designating two installation refuges and the Forest and Wildlife Corridor (Section 13). Additionally, Fort Belvoir has directed land development away from wetland and steep-sloped riparian areas. The *Fort Belvoir Real Property Master Plan* (Woolpert, 1993a) designates the refuges, corridor, wetlands, and steep-sloped areas as "environmentally constrained to development."

Fort Belvoir has been managing threats to the installation's vegetation resources (e.g., invasive/exotic species, stormwater-related problems, problem wildlife, etc.), and has been performing vegetation restoration and enhancement, as follows:

Invasive/Exotic Species Management

Since 1996, Fort Belvoir has been implementing management actions to control invasive/exotic vegetation on post. Management actions to date have focused on eradicating existing priority invasions of exotic plant species including cutting back kudzu (*Pueraria lobata*) along the Potomac River at the Officers' Club, treating phragmites in Accotink Bay and Dogue Creek, treating Japanese bamboo (*Phyllostachys* spp.) at various locations (e.g., ABWR main entrance), and removing purple loosestrife (*Lythrum salicaria*) at Dogue Creek.

Stormwater Management Problem Correction

As addressed in Section 7, in 1999 Fort Belvoir initiated a long-term watershed restoration/enhancement program to correct existing stormwater-related problems, and safeguard against future problems. Ongoing erosion and sedimentation within installation stream corridors and drainageways was found to be threatening the integrity of the riparian forest communities and the downstream wetland communities. An example of this type of problem was the extensive sedimentation in areas of the Accotink Bay marsh (subwatershed 03), where the sedimentation resulted in the mortality of riparian forest vegetation, and the promotion of invasive species such as phragmites. Subwatershed 03 was the first watershed addressed for correction in 1999. In 2000, two additional subwatersheds (04 and 11) were addressed for similar types of correction. In addition to these in-stream projects, watershed restoration/enhancement actions have included the removal of abandoned pavement and re-foresting of 10 acres throughout the installation.

Problem Wildlife Management

As addressed in Section 11, the primary sources of wildlife impact to Fort Belvoir's vegetation resources are deer overbrowsing, and beaver and woodchuck activities (e.g., tree gnawing and dam construction). Deer management consists primarily of population control, which is a long-term program. Beaver management is undertaken on a case-by-case basis, and consists of installation of beaver guards to protect individual trees. Fort Belvoir uses tree shelters (i.e., tree tubes) to protect newly planted trees from damage by deer and rodents.

Vegetation Restoration/Enhancement

During the past 5 years, Fort Belvoir has undertaken a number of reforestation and riparian planting projects. Some reforestation projects were undertaken as part of the Forest and Wildlife Corridor management program (Section 13), which calls for maintenance of a contiguous band of forest habitat through the installation. Other projects, such as the plantings in the vicinity of the

new Fairfax County Parkway through Fort Belvoir, and the plantings in the vicinity of Woodlawn Road and between Woodlawn and Franklin Roads were undertaken as mitigation projects to offset vegetation losses from development projects. Riparian plantings, such as the planting along Dogue Creek near Mount Vernon Road, were undertaken in accordance with the Chesapeake Bay Program's riparian forest buffer directive, which calls for the restoration of 2,010 miles of riparian forest buffer by the year 2010. The use of tree shelters or "tubes" for reforestation has greatly increased the survival and growth rate for tree seedlings associated with such plantings. The shelters are open-ended translucent tubes 4 feet in length placed over the seedling. The bottom of the tube is sealed to the ground with composted leaves and the tube is staked in place. The shelters create a microclimate for the seedling that moderates moisture and temperature changes, and protects against browsing by deer and rodents. Netting is placed over the top of the tube to exclude birds that may become trapped in the tube.

During the past 5 years, Fort Belvoir has also undertaken a number of projects to enhance wildlife habitat value of specific grassland areas. Management actions to date include the use of wildlife seed mixes when replanting specific disturbed areas (e.g., Theote landfill, Fairfax County sewer line); under planting recently thinned pine stands with wildlife seed mixes; and, alteration of the mowing schedule for the grassland area at the ABWR entrance to encourage conversion from fescue to native warm season grasses. From 1995 to 2000, Fort Belvoir has undertaken such habitat enhancement projects on more than 100 acres (e.g., 30 acres pine stands, 30 acres grasslands and rights-of-way and reduced mowing plan, etc.).

Undeveloped Vegetation Law Enforcement

Through its Memorandum of Agreement for Cooperative Law Enforcement between the U.S. Fish and Wildlife Service and the U.S. Army Garrison Fort Belvoir, dated 20 February 1996 (Appendix A), Fort Belvoir has one Special Agent within ENRD. The agreement is to provide mutual law enforcement benefits to the installation and to the Fish and Wildlife Service by sharing expertise, training, intelligence, information, and specialized equipment. The intent of this agreement is to provide the Special Agent with the authority to enforce all laws administered by the U.S. and the installation relating to fish, wildlife, and other natural resources. The agreement delegates authority to the Special Agent to enforce several specific federal laws on Fort Belvoir including the following: Lacey Act Amendments of 1981 (16 U.S.C., 3371-3378), Migratory Bird Treaty Act (16 U.S.C. 703-712), Migratory Bird Hunting and Conservation Stamp Tax Act (16 U.S. C. 718-718h), Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), Airborne Hunting Act (16 U.S. C. 742J-1), National Wildlife Refuge Systems Administrative Act (16 U.S.C., 668dd-668ee), Endangered Species Act of 1973 (16 U.S.C., 1531-1543), Marine Mammal Protection Act of 1979 (16 U.S.C., 1361-1384, 1401-1407), and Archeological Resources Protection Act of 1979 (16 U.S.C. 470a. (A)-(1) (A)).

9.3.3.2 Multiple Use Support

Military Training and Testing

The Fort Belvoir Training Regulation (Fort Belvoir Regulation 210-27) includes measures to protect vegetation and other natural resources from impact by training activities. The regulation requires ENRD review of all land disturbing activities (U.S. Army, 1994).

As needed, ENRD performs specific vegetation and/or land management activities in support of the military mission. An example of recent support actions is the tree hazard removal at Davison Army Airfield.

Outdoor Recreation

Fort Belvoir controls the types, locations, and magnitude of recreational activities to ensure that such uses do not adversely affect native vegetation resources. All proposed recreational activities and events must be reviewed by ENRD for potential natural resources impact. This applies to use requests from outside entities as well as requests from installation organizations (e.g., Directorate of Personnel and Community Activities).

In 1998, Fort Belvoir formalized the following broad recreational use restrictions within the Fort Belvoir Supplement to AR 200-3 (Appendix H):

- "Off-road vehicles (ORV), which include but are not limited to motorized all-terrain vehicles, snow mobiles and dirt bikes, may not be operated on Fort Belvoir. Bicycles, which include but are not limited to all-terrain bikes and mountain bikes, are not permitted off paved roadways or off paved bike trails, unless otherwise approved by DIS [Directorate of Installation Support]."

- "Privately owned watercraft, which include but are not limited to motorboats, personal watercraft, sailboats, canoes, rowboats, kayaks, and inflatable watercraft, must be launched at designated areas. All watercraft, with the exception of wind-board surfers, must be launched at the marina launch facility, unless otherwise approved by DIS… No watercraft shall be launched or landed within the wildlife refuges, unless otherwise approved by DIS."

- "Any proposed outdoor recreation use of installation refuges (Accotink Bay Wildlife or Jackson Abbott Wetland refuges) must be coordinated with, and approved by DIS. No outdoor recreational activities which are likely to have a detrimental effect on natural resources shall be permitted to occur in the refuges…"

Forest and Agricultural Products

Fort Belvoir has no agricultural activity.

During the past 10 years, Fort Belvoir has had small-scale timber sales, mostly selective thinning of planted loblolly pine stands and firewood sales. The most recent selective thinning was undertaken in 1998 and included three stands, totaling 31 acres. This thinning was done to improve timber stands and wildlife habitat. Also in 1998, seven acres of timber were cut from areas adjacent to Davison Army Airfield to remove the hazard that the trees presented to low flying aircraft.

In the past, Fort Belvoir conducted regular commercial logging of its forested areas. At that time more than 4,000 acres of the installation land area were under multiple use management, including commercial forest. Today, the number of acres actively managed as commercial forest consists of 400 acres of planted loblolly pine. Presently, timber sales are limited to the sale of firewood, which is sold under permit from ENRD. Timber stands of commercial value that will

be impacted by new construction are to be sold and harvested prior to the start of construction. If the timber is not sold, the assessed value of the forest products is to be accounted for.

In recent years the insect pests of major concern to Fort Belvoir have been gypsy moth and canker worms. Fort Belvoir is a cooperator with local, state and federal entities (e.g., Fairfax County Gypsy Moth Program, USDA Agricultural Research Service) to monitor and treat for gypsy moth, and to study the effectiveness of various control technologies. Forest pest management is accomplished in accordance with the *Fort Belvoir Integrated Pest Management Plan* (U.S. Army, 2000b). IPM stresses monitoring and selective use of pesticides.

Fort Belvoir uses Bt for gypsy moth treatment. The decision to make treatments is based upon annual surveys and risk assessments. The most recent treatment was performed in 1992 by aerial spraying (helicopter).

Fort Belvoir initiated treatment of forest areas for canker worms in 1999, when two separate 20-acre areas were treated.[6] The decision to perform treatment is based upon annual surveys and risk assessments.

Environmental Education and Scientific Research and Study

In accordance with 32 CFR 190, Part 190 – Natural Resources Management Program, "The Department of Defense shall act responsibly in the public interest in managing its lands and natural resources. There shall be a conscious and active concern for the inherent value of natural resources in all DoD plans, actions and programs." As a steward of these public lands, Fort Belvoir has established a formal program for the education of the public regarding conservation of natural resources. The ABWR Environmental Education Center was opened in April 2000 to promote the use of Fort Belvoir's two refuges (i.e., the ABWR and the Jackson Miles Abbott Wetland Refuge (JMAWR) for this purpose. The refuges and center are the focal point of the program that allows school groups and organizations to use the refuges as an outdoor classroom, allowing participants to gain a better understanding and appreciation of the installation's natural resources. In addition, colleges and universities use the refuges for formal research and study on a case-by-case basis.

Land Development

At the site/project level, Fort Belvoir has minimized tree loss to excavation, development and maintenance actions, by institutionalizing standards and practices for tree protection. One major tool is the Fort Belvoir *Tree Removal and Protection Policy* letter (U.S. Army, 2000d), which establishes requirements and criteria for tree protection and replacement, including a two-for-one replacement of all trees lost to new construction (Appendix I). Between 1995 and 2000, Fort Belvoir has replanted more than 100 acres as replacement for trees lost to construction projects. Other major tools are the Fort Belvoir Excavation permit, required under the Excavation Work Policy letter (Appendix J) (U.S. Army, 2000e), the Fort Belvoir Building Disposal Checklist required by the Directorate Installation Support, and the Fort Belvoir *Environmental Protection Specifications* (Appendix L), applicable to construction contracts. The Fort Belvoir permits require ENRD review of all land disturbing and facility demolition activities. Additionally, Fort

[6] Fort Belvoir makes site-specific treatments in the cantonment area for nuisance control.

Belvoir requires ENRD review of the siting and design, including site layout and landscaping, of all new facilities.

9.4 CONTINUING AND FUTURE UNDEVELOPED AREAS VEGETATION MANAGEMENT

Fort Belvoir's vision for the future is to continue the management emphasis and actions addressed in Section 9.3. Simply put, this will be to conserve and enhance native vegetation resources, while providing balance among the multiple legitimate uses/users of installation vegetation resources. Continued support of military training and testing will take priority. After that, management emphasis will be on conservation and enhancement of native vegetation resources in accordance with established DoD and DA natural resources management policies, and DoD and DA commitments to natural resource stewardship programs, such as the Chesapeake Bay Program. Fort Belvoir will continue to provide the public opportunities for recreational use of undeveloped areas vegetation and for environmental education and for scientific research and study, consistent with resource conservation objectives. Fort Belvoir recognizes that, as steward of public lands, the installation has a responsibility to protect natural resources for future generations. Fort Belvoir will accomplish this stewardship through a balanced natural resources management program that emphasizes conservation and enhancement of native biodiversity.

9.4.1 Undeveloped Areas Vegetation Management Objectives

1. Protect against loss of native diversity of Fort Belvoir's vegetation resources, as described by DCR-NHP (McCoy and Fleming, 2000; Hobson, 1996; and Paciulli, Simmons and Associates, Ltd., 1998a, 1999a).

2. Conserve and enhance vegetation resources that have been prioritized for conservation by the Virginia Natural Heritage Program:

   a. Endangered, threatened, or rare plant species and their habitats. As of 2000, Fort Belvoir has four state rare plant species and three watchlist plant species (Sections 9.2.3 and 12.2.4):

State Rare Species	State Watchlist Species
Carex vestita (velvety sedge)	*Eleocharis smallii* (creeping spikerush)
Lathyrus palustris (vetchling)	*Iris versicolor* (blueflag)
Ranunculus ambigens (water-plantain spearwort)	*Sparganium eurycarpum* (large bur-reed)
Scirpus fluviatilis (river bulrush)	

   b. State rare plant communities. As of 2000, Fort Belvoir had four plant communities with high ("very rare" or "extremely rare") rarity rankings, as defined and mapped by DCR-NHP (McCoy and Fleming, 2000): Coastal Plain/Piedmont acidic seepage swamp, tidal shrub swamp, tidal freshwater marsh–mixed type, and tidal freshwater marsh–spikerush/golden-club type (see Section 9.2.2).

c. Wetlands

d. Riparian forests

3. Provide land cover conditions compatible with military testing and training requirements.

4. Provide opportunities for public access for recreation and for environmental education, and study consistent with resource conservation.

5. Conserve and enhance the installation's natural beauty.

9.4.2 Undeveloped Areas Vegetation Management Strategies

1. Continue to obtain scientific information on installation vegetation resources to support our knowledge of their biodiversity, to identify stresses and detect changes to biodiversity, and to evaluate the effectiveness of management actions.

   - Complete the next installation-wide plant community inventory update on a 10-year cycle (in fiscal year (FY) 10). The inventory will entail field survey, photo-interpretation, community characterization and GIS datalayer development. The inventory update will map plant community boundaries and will inventory the locations and acreages of each plant community type in a way that will allow for a comparison among prior inventories to identify changes. Maintain the inventory in the installation GIS.

   - Continue to perform floristic surveys to update the Fort Belvoir plant species list.

   - Develop and implement a program to monitor conditions within the ecological communities reference plots (McCoy and Fleming, 2000), in accordance with DCR-NHP recommendations. This monitoring will be undertaken to assess changes to the biodiversity of Fort Belvoir's vegetation resources. Include monitoring of the high-rarity-ranked rare plant communities, as recommended by DCR-NHP (Hobson, 1996; McCoy and Fleming, 2000). Coordinate with DCR-NHP to develop and implement the monitoring program. Develop a monitoring plan in FY 02.

   - Perform year-round surveillance (i.e., close observation, in lieu of studies or monitoring projects) of vegetation resources to detect disruptions and/or locations where threats (e.g., problem wildlife, sedimentation) are affecting resource integrity.

   - Perform localized and/or issue-specific vegetation studies (e.g., plant regeneration studies), as needed to support resource management, or for specific installation projects, such as new development.

   - Coordinate with DCR-NHP Stewardship Office, and other organizations involved with plant conservation, regarding stewardship recommendations for vegetation resources.

2. Continue to set aside areas of ecologically significant vegetation, consistent with DoD policy for setting aside areas for conservation as "Special Natural Areas" (Section 13). As of 2000, Fort Belvoir has three such areas: two refuges and the Forest and Wildlife Corridor. Consider modifying the boundaries of the refuges, and/or establishing a buffer for the refuges, to protect ecologically significant vegetation resources that presently are located outside the refuge boundaries. Continue to designate these set-aside areas as "environmentally constrained to development" in the *Fort Belvoir Real Property Master Plan*.

3. Continue to maintain a riparian forest buffer along all installation waterways and shorelines consistent with the Chesapeake Bay Program Riparian Buffer Directive.

   - Continue to designate steep-sloped riparian areas as "environmentally constrained to development" in the installation *Fort Belvoir Real Property Master Plan*.

   - Continue to re-plant, or enhance, native vegetation within riparian areas. Example projects include the following:
     - Reforestation of a minimum 200-foot wide riparian zone on the former petroleum, oil, and lubricant site along Gunston Cove
     - Riparian plantings along the Tompkins Basin shoreline, consistent with the planning for a multi-purpose recreation area at that site
     - Enhanced riparian planting along Dogue Creek above the Mount Vernon Road Bridge, consistent with the planning for the Potomac Heritage National Scenic Trail at that location. Additional planting projects will be identified and undertaken as land-use changes (e.g., as old areas are vacated and structures are removed) allow.

   - Continue to protect riparian buffer areas by directing water-based training activities (military and civilian) to designated shoreline training areas.

   - Continue to direct shoreline recreational activities to designated recreational areas.

4. Continue to develop and implement actions to control invasive/exotic species, consistent with the requirements of Executive Order 13112 to control threats to native plant community integrity by invasive/exotic species.

   - Monitor known populations of invasive/exotic species as recommended by Paciulli, Simmons and Associates, Ltd. (2000b) and DCR-NHP (McCoy and Fleming, 2000). Perform year-round surveillance for new outbreaks. Monitor for success of treatment/control actions.

   - Develop action thresholds for treatment of invasive/exotic species.

   - Continue to make treatments to control phragmites (*Phragmites australis*), as recommended by DCR-NHP (Hobson, 1996; McCoy and Fleming, 2000).

   - Develop and implement control actions for other problematic invasive species, including kudzu (*Pueraria lobata*), Chinese wisteria (*Wisteria sinensis*), mile-a minute

(*Polygonum perfoliatum*), marsh dewflower (*Murdannia keisak*), etc., as recommended by DCR-NHP (McCoy and Fleming, 2000).

- Review and revise the Fort Belvoir *Installation Design Guide* and recommended planting lists to prohibit planting problem species. Develop and provide information on invasive/exotic vegetation control through Self-Help and the Garden Center.

- Establish/participate in a regional effort for invasive/exotic vegetation control.

5. Continue to implement watershed conservation and restoration actions, consistent with the Chesapeake Bay Program (Section 7) to control and correct stormwater-related threats to vegetation resources.

   - Continue to replant and restore native vegetation cover to disturbed areas throughout installation watersheds. This includes the removal of abandoned pavement to reduce impervious surfaces.

   - Continue to correct stormwater-related problems that cause bank and in-stream erosion and bank failure that lead to downstream sedimentation and encourages establishment of invasive/exotic vegetation, as recommended by Landgraf (1999) and Allen et al. (1999).

   - Continue to implement stormwater management actions, including BMPs, to attenuate stormwater flows and prevent sediment from degrading downstream wetlands, as recommended by Allen et al. (1999).

   - Incorporate the principles of low impact development (VA DCR, 1992) in facility siting and design projects on post. Such principles emphasize preservation of vegetation cover and minimization of impervious surfaces.

   - Monitor for success of management actions, and to track existing problems and identify new problems.

6. Continue to manage the populations and the actions of wildlife having deleterious effects on installation vegetation resources and associated wildlife habitats, to control threats to vegetation resource integrity (Section 11).

   - Continue to control the deer population through the Fort Belvoir bowhunting program (Section 11).

   - Continue to monitor beaver and woodchuck activity to detect impact to vegetation resources. Establish impact thresholds that trigger control action. Develop and implement protection measures if impact thresholds have been exceeded, as recommended by DCR-NHP (Hobson, 1996; McCoy and Fleming, 2000).

7. Continue to perform vegetation restoration, enhancement and modification projects to establish or enhance native vegetation in disturbed areas, and to improve native wildlife habitat, as appropriate and possible.

8. Continue to re-establishing native vegetation to disturbed locations within environmentally sensitive areas (e.g., riparian areas, corridor, etc.). Potential projects include:

   - 1800 area abandoned driveway and parking (bottomland hardwood/riparian zone)

   - Petroleum, oil, and lubricant yard in the R&D Center (200-foot-wide riparian buffer for Gunston Cove)

   - Patrick Road along the Potomac River (transitional freshwater wetland).

9. With regard to wildlife habitat enhancement, continue (1) to use wildlife seed mixes recommended by VDGIF when re-planting disturbed areas where appropriate (e.g., utility line rights-of-way) and (2) to convert grasslands from exotic, low-value wildlife cover (e.g., fescue, lespedeza) to native, high-value early and transitional successional habitat conditions, according to the recommendations of Paciulli, Simmons and Associates, Ltd. (1996), the PIF Program (Watts, 1999), and VDGIF where appropriate. Potential projects include the following:

   - Strip mowing, soil amendment, and seeding three old landfill sites along Poe Road including one in the ABWR.

   - Maintaining Theote Debris Fill cap with clover and orchard grass mix

   - Strip mowing training area T-9.

10. Continue to review and respond to military (e.g., Directorate of Plans, Training, Mobilization, and Security; Davison Army Airfield; Reserves, etc.) requirements for vegetation management (e.g., vegetation hazard control).

11. Continue to review and respond to Fort Belvoir Outdoor Recreation Office requests for access to/use of vegetation resources.

12. Continue to manage forests to balance potential commercial value with wildlife value.

    - Continue to control forest pests, in accordance with the principles of Integrated Pest Management, as required by AR 200-5, to control threats to vegetation resource integrity. Continue to monitor gypsy moth and canker worms in accordance with the *Fort Belvoir Integrated Pest Management Plan* (IPMP) (U.S. Army, 2000b). This includes gypsy moth egg mass surveys in the fall and/or winter, and canker worm surveys in the winter. Continue to perform surveillance to detect occurrences of new forest pests in accordance with the Fort Belvoir IPMP.

      - Continue to perform treatments for gypsy moths and canker worms on post in accordance with the Fort Belvoir IPMP.
      - Continue to maintain liaison with Fairfax County, Virginia Department of Forestry and USDA Forest Service personnel regarding current actions,

infestations, new initiatives and new products related to pest monitoring and control.

- Evaluate the threat of wildfire.
  - Review and provide recommendations for updating the Fort Belvoir Fire Department's standard operating procedures concerning wildfire control measures. Create a system to determine when fuel loads in firebreaks pose a fire hazard and maintain firebreaks accordingly. Identify BMPs to reduce fire hazard.
  - Coordinate with the Virginia Department of Forestry for information on fire indices, potentially hazardous fuel loads, and fire prevention measures.

- Continue to perform timber stand improvement.
  - Continue to replant/reforest areas after harvest.
  - Continue to emphasize wildlife habitat enhancement during timber stand improvement. Continue to use wildlife seed mixes in replanting after timber removals, as appropriate.

13. Continue to conduct timber inventories and sales in accordance with the requirements of AR 200-3.

    - Complete the next installation-wide timber inventory in FY 01, on the 10-year cycle set by AR 200-3. The inventory will entail field survey, photo interpretation and GIS datalayer development. The results of the inventory will be incorporated into the installation GIS.

    - Develop timber contracts and conduct sales as warranted to enhance biological integrity and to dispose of timber designated to be removed for new construction. Conduct firewood sales.

14. Continue to use the installation project/activity review process to incorporate vegetation conservation requirements into all phases of facilities siting, construction, renovation, operation, maintenance, and demolition activities; in reviewing and supporting military training and testing activities; and, in reviewing and responding to outdoor recreation, environmental education, scientific research and study, all other types of land area access and use requests.

    - Continue to issue the *Fort Belvoir Tree Protection Policy Letter* to stress preservation of trees, and replacement of unavoidable loss of trees due to construction or due to natural causes, such as storm damage, insects or disease. Continue to require all tree removals to be reviewed and approved by ENRD, and replaced at a minimum two-to-one ratio.

    - Review and revise as needed the Fort Belvoir *Environmental Protection Specifications* applicable to construction contracts to ensure that they include vegetation protection provisions.

    - Review and revise as needed the *Fort Belvoir Environmental Checklist* to address vegetation protection.

- Develop recommendations to revise the *Installation Design Guide* to include site planning and construction design that minimizes natural area loss, adopts low impact development and BMPs (for stormwater management and sediment and erosion control), and reduces impervious surfaces.

- Incorporate vegetation protection strategies into utilities privatization, and all other privatization and outsourcing actions, as appropriate.

- Develop recommendations for the formation of a facilities siting and design review committee that includes representatives from ENRD, Master Planning, and the Contract Management Division. The committee should develop and participate in a siting and design review process to ensure the consideration of vegetation protection in all siting and design decisions.

- Continue to include vegetation protection as part of the Excavation Permit and Demolition Permit review processes.

- Continue to include vegetation protection in all real estate actions (e.g., outgrants, leases, rights of entry) as appropriate.

- Review and revise as needed the Fort Belvoir Training Regulation to address vegetation protection.

15. Continue to provide technical assistance for emergency situations, such as uncontrolled fires, that threaten vegetation resources.

16. Continue to respond to requests for technical information from on-post and off-post entities, as appropriate.

17. Continue to investigate and enforce violations of federal and state laws and regulations, as well as DoD, DA, and Fort Belvoir policies.